ABSTRACT

A tire and wheel assembly permits hand-mounting of the tire on the wheel by specifying the relationship of the tire bead circumference and the wheel geometry so that:

$$C_t = 0.5C_w + 2\sqrt{0.5D_w{}^2 + \left(0.5D_w + G + H\right)^2 + \left(W + Y\right)^2} + M$$

where, C_t is the circumference of the tire bead seat, C_w is the circumference of the wheel well, G is the depth of the wheel well, W is the axial distance of the wheel well from the mounting side flange, H is the radial height of the rim flange, and Y is the axial width of the rim flange, and M represents an amount of additional length, preferably about 80 millimeters.